Saskatchewan Agriculture, Food and Rural Revitalization

ADF

AGRICULTURE DEVELOPMENT FUND

FINAL REPORT

20020265

DEVELOP TECHNOLOGY INFORMATION PACKAGE FOR KEY AGRICULTURAL GROWTH AREAS

Funded by: The Agriculture Development Fund

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Humboldt

ADF#20020265

Final Report

Technology Information for Ag Growth Areas

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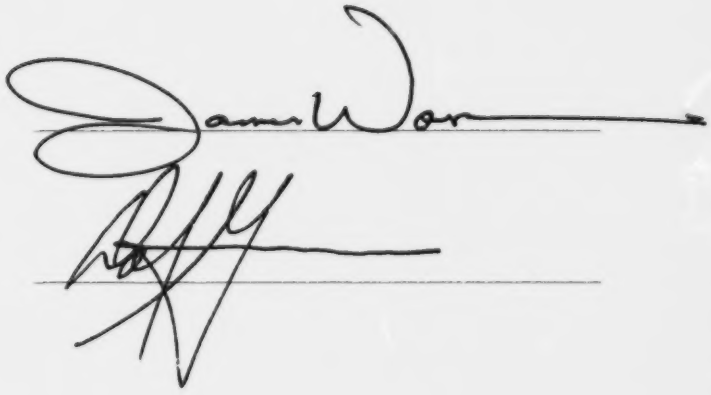

Acknowledgement

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Table of Contents

Page

1. Summary 1

2. Technical Report 2
   - 2.1 Developing the Technology Base 2
   - 2.2 Developing the Information Strategy 6
   - 2.3 Accomplishments 9
   - 2.4 Impact 14
   - 2.5 Conclusions 15

3. Personnel 16

5. Equipment 18

6. Project Materials 19

7. Project Photos 20

8. Acknowledgements 21

9. ICAR Data Entry 22

Appendix I – Example PAMI News Release 24

Appendix II – Media Agencies List 26

Appendix III – Example of Research Update 51

1. Summary

The objective of this project was to disseminate technical information generated in key agricultural growth areas by PAMI's research work with partners. PAMI developed the technology base and information strategy, and accomplished over 70 specific activities or items to disseminate information to producers, processors and other stakeholders in the agricultural industry on the Canadian Prairies.

2. Technical Report

2.1 Developing the Technology Base

Saskatchewan's key agricultural growth areas were targeted as the technology base for development of information packages. These are as follows:

1. Pork and Beef/Ethanol Production
2. Flax Whole-crop Utilization
3. Pulse Crop Production, Processing
4. Organic Crop Production
5. Prairie Crops Processing
6. Other Topics

Growth areas 1 through 4 were originally envisioned as the core for this project. The technology base for this project was to be derived from PAMI's agricultural research activities during the 2003/04 fiscal year. Since most funding for such projects comes from outside sources like ADF, CARDS, and producer associations, PAMI prepared a large number of proposals and depended on successful selection of its projects in order to secure work and build the technology base.

In the year, PAMI was successful in acquiring 24 projects, totaling $660,000 in funding. PAMI levered these funds with approximately $150,000 of its own held funds, from base-grants and a portion of the funds from this project.

A good technology base was achieved in several of the target areas from work during the current and previous years. However, gaps were left in "Pulse Crop Production & Processing", and "Organic Crop Production" due to proposal rejections. In order to provide information in these areas work by others and PAMI's work from previous years was accessed. In addition, projects were acquired regarding prairie crops processing and other topics unrelated to the core group. In order to accommodate these the technology base was expanded to include the six topics shown above. The projects conducted in each of the key areas are summarized in the sections below.

2.1.1 Pork And Beef/Ethanol Production

Corn Seeding Project – Monsanto, Bourgault, MRAC, Claas, Caterpillar – Manitoba

- This project examines the benefits of solid seeding as compared to planter seeding of corn for silage.

Silage Corn and Barley Productions – ADF – Saskatchewan

- This project compared air-drill seeded corn to barley, for silage production.

Bull Fertility Testing – Saskatchewan Cattle Marketing Deductions Fund – Manitoba

- With a cooperating veterinarian, this project determined whether an inexpensive temperature measuring method could duplicate imaging technology used to enhance bull soundness exams.

Precipitation Harvesting – ADF – Saskatchewan

- This PAMI/PFRA project will demonstrate and test methods for enhancing water collection by use of plastic sheeting to collect rainwater for dugout fill.

Demonstration of the Benefits of Swine Manure Injection on Annual Crops – Canadian Pork Council – Saskatchewan

- This project is to demonstrate the best management practices (bmp) for injecting liquid swine manure for annual crop production, as well as the negative effects of over application.

Swine Manure Demonstrations – Canadian Pork Council – Saskatchewan

- This project demonstrated best management practices for injecting liquid swine manure for annual crop production, with a focus on greenhouse gas implications.

Economic Analysis Swine Manure – ADF – Saskatchewan

- This project did an economic analysis of post-emergent swine manure injection on wheat, based on data from a 3-year research/demonstration project.

Long Term Swine Manure Research – U of S – Saskatchewan

- This project continues work at four long-term manure research sites including Humboldt, Melfort, Plenty, and Riverhurst, where annual fall applications of swine manure are injected, and the results monitored for the long term.

Application of Liquid Swine Manure to Hybrid Poplar – PFRA – Saskatchewan

- This 5-year project with PFRA will test a theory that a small poplar plantation could be a cost-effective and environmentally sound way to consume hog manure, with trees harvested to create revenue.

Post–Emergent Injection of Swine Manure on Wheat – ADF – Saskatchewan

- This three-year project investigated the agronomic response of wheat to post-emergent injection of swine manure.

Guidebook to Minimize GHG Impact of Hog Production – Canadian Pork Council – Manitoba, Saskatchewan

- This literature research project will develop a guidebook for hog producers to minimize Green House Gas (GHG) emissions.

2.1.2 Flax Whole-Crop Utilization

Solid Seed One Acre Flax Site – Biolin Research Inc. – Saskatchewan

- This project investigated the feasibility of growing fibre flax using one of PAMI's plot drills to seed test plots at three locations in the province.

Flax Production - SAFRR Agri-ARM – Saskatchewan

- PAMI is working with the Agri-ARM sites to seed fibre flax for the purpose of agronomic comparisons at Indian Head, Redvers, and Canora.

Flax Straw Recovery – ADF – Saskatchewan

- This project will determine the amount of flax straw recoverable using various combining and baling combinations, for use in developing straw availability maps.

Retting Flax Straw – ADF – Saskatchewan

- This project investigated methods of optimizing flax straw retting in round bales for improved processing, with a goal of having no waste liquids from the retting process.

2.1.3 Pulse Crop Production, Processing

- No project work in 2003/04.
- Project results from previous years will be employed in information development.

2.1.4 Organic Crop Production

- No project work in 2003/04.
- Project results from previous years will be employed in information development.

2.1.5 Prairie Crops Processing

Hammer Mill Ginseng Root – POS Pilot Plant Corp. – Saskatchewan

- This project is to determine if ginseng root can be hammer milled to a fine powder in Saskatchewan, which would be more convenient and reduce shipping cost for the client.

Alfalfa Fractionation – ADF, FDC – Manitoba

- This project, with the Food Development Center and Great Plains Aseptic Processors, is to determine if proteins can be extracted from alfalfa at economic levels.

2.1.6 Other Topics

Engineering Farm Safety – CARD/ADF/Alberta AgTech Centre – Saskatchewan

- This project is to determine and then develop two safety improvements for used farm equipment. The two improvements (improved auger inlet guarding, and a manual for farm-fabrication of machinery guards) were developed, tested, and presented to provincial farm safety organizations across Canada.

Development of a Seabuckthorn Harvester – MRAC/ADF - Manitoba

- This project is to develop a mechanical harvester for Saskatoon, Chokecherries, and Seabuckthorn berries.

Bee Uncapping Device - MRAC, Intersteel Industries – Manitoba

- This project is to develop a more efficient tool for removing the wax seal on honeycombs.

Agro Forestry Automated Tree Planting – ADF - Saskatchewan

- This project searched out automated means of planting large areas of farmed land to plantation poplar, and described them in a guidebook now available through the SK Forestry Centre and PAMI.

Agronomic Effects of Surface Applied Poultry Manure on Crop Production – Sask. Egg Producers – Saskatchewan

- This is a project to evaluate the agronomic benefits of different rates of surface application of poultry manure.

Natural Air Drying Systems – NRCAN – Saskatchewan

- The object of this project is to develop a natural air-drying decision support system to improve efficiency and reduce Greenhouse Gas Emissions. PAMI is presently investigating sensor technology, the present state of grain drying in Western Canada, and reviewing several grain-drying computer models, as well as working on the decision system design.

2.2 Developing the Information Strategy

PAMI must provide information from its technology base to a wide array of users across the Canadian prairies. These users have a broad scope of habits and usage patterns. To effectively serve all PAMI an Information Strategy has been developed, as shown in Figure 1, below. The illustration is detailed and complex. Because of this, a system of number-balloons is used to guide the viewer through the various aspects of the strategy. The section numbers in the paragraphs below correspond to those on the illustration (**Figure 1**).

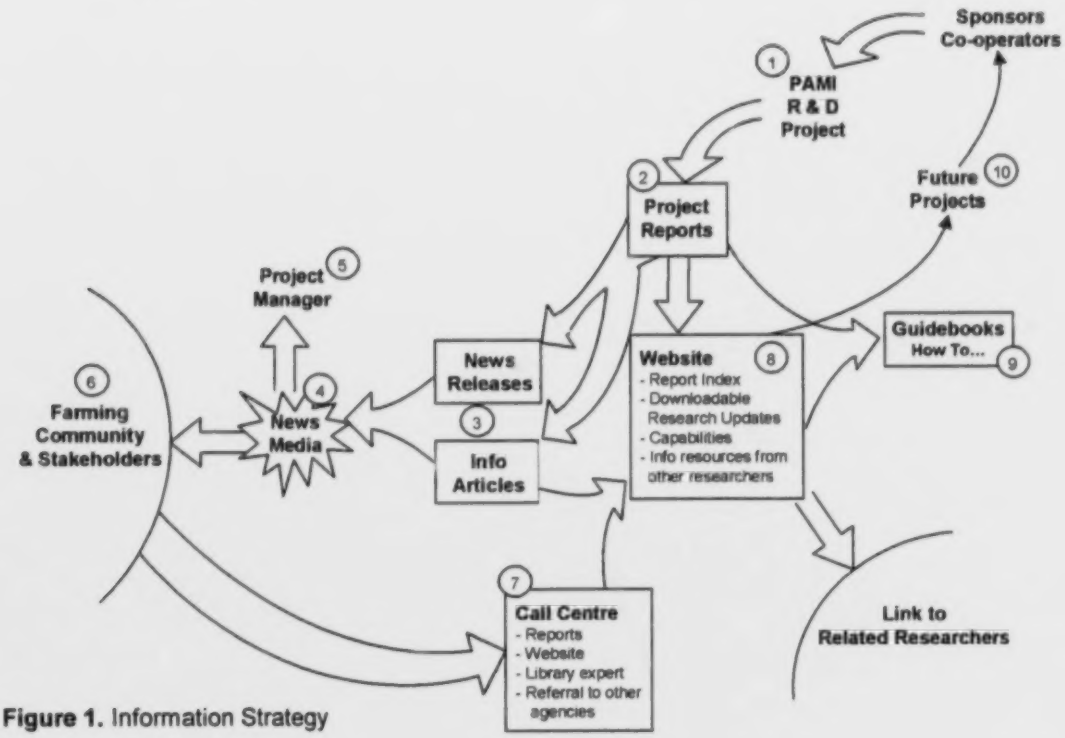

Figure 1. Information Strategy

1. **PAMI R & D Project:** PAMI carries out a number of agricultural research projects each year. These are usually conducted in cooperation with other researchers, and are financially sponsored by government funding agencies, producer associations, and by PAMI itself.

2. **Project Report:** The end point of each R & D project is the project report. All relevant outcomes of the project are recorded in this document. Although the document is exhaustive, it is larger and contains more information than many stakeholders can make use of. Therefore, this report is used as a basis for many other information items to be generated, as described following.

3. **News Releases & Information Articles:** A key point of PAMI's information strategy is the media industry in the Prairie Region. In order to gain access to this effective dissemination system PAMI must summarize its work in journalistic style and under topical headlines that will catch the attention of the media. PAMI employs its own staff, as well as contract writers to prepare several news releases and articles each year.

4. **Media Agencies:** As stated earlier, PAMI targets the media in its information strategy. This industry consists of daily, weekly and monthly newspapers, radio, Television, industry publications and newsletters. PAMI relies heavily on uptake by these agencies to make the farming community aware of its information. PAMI writes to catch the attention of farmers and other stakeholders through these agencies. Information is written to the "person in the street" and is summarized for impact. However, PAMI is careful to do two things in each release or article it prepares:
   - Acknowledge the support of funding agencies.
   - Provide contact information for follow-up for more information.

5. **Media Support:** It is critical to provide additional technical support to the media as they work with the material issued by PAMI. To accomplish this, PAMI's Project Managers make themselves available on each news release to further explain the information or to provide additional information or comment. In this way, the various media agencies can produce somewhat unique news material, even though working from the same basic document as all others. This increases the uptake and dissemination of PAMI's material.

6. **Farm Community & Stakeholders:** Producers, processors and other stakeholders rely on the media for technical information. They have access to all media forms and utilize them all, favouring particular types at various times of the year. They also readily follow up on information summaries appearing in the media. In fact, they rely on the media as a guide, even over Internet searching. It's therefore critical to get the right information, in the right amount and form in front of the farm community through the media. In addition to the media, PAMI takes a direct role in disseminating information to the farming community. Three common forms of this are as described following:
   - PAMI hosts information booths at farm and Industry Shows.
   - PAMI experts give technical presentations to farm and industry groups, at their annual gatherings.
   - PAMI hosts tours of its facilities as well as its various research plots and test sites across the province.

7. **Call-Center:** PAMI has developed a "call-center" approach for producers seeking in depth information on its work. The operator of this center is widely knowledgeable in all PAMI information and resources and can quickly identify information needs. This leads to referral to the information source, whether it be PAMI's web site, or a mail-out, or fax-out of information. Other resources, such as PAMI's research librarian and its Project Managers can also be referred to provide the information required.

   To provide effective information, PAMI writes its project results in layers, building on the underlying project report mentioned above. A key document within this strategy is called the Research Update. This report gives more information detail than the news release or article, while omitting some of the scientific background and focusing rather on the resulting information.

8. **Web Site:** PAMI is continuously building and developing its web site. The strategy is that this will become the main referral point for information requests. In order for this to be satisfactory, the site must be easy to navigate, and must contain useful, timely information. Over the 2003/04 year PAMI invested substantially in web site development, employing its own on-staff experts. PAMI's website contains a wide scope of information as follows:
   - Index of almost 1,000 PAMI reports, written over the past 28 years.
   - Downloadable reports, from more recent projects.
   - Details of capabilities and services offerings.
   - Information and aids such as calculators from PAMI's own work and from other researchers.
   - Links to other relevant sites.

9. **Guidebooks:** As the volume of information grows in a particular are and reaches a critical mass, PAMI looks for opportunity to develop Guidebooks and other "How to ... " manuals. The organization has been quite successful with this approach and has written about 10 major documents of this type in the last several years. These books are marketed through various venues and are sold at a cost to recover incremental printing, postage, and handling, since development costs are usually funded by sponsors.

10. **Future Projects:** During all of its project and information services work PAMI maintains a careful watch for opportunities for other projects or additional work that will be of benefit to producers or processors. These opportunities are explored in depth and the industry, and governments are approached to discuss project scope and funding possibilities.

2.3 Accomplishments

PAMI accomplished a significant volume of information activity over the past year, beyond project reports. Accomplishments in each of the above Information areas are summarized below, and detailed in the tables following:

- 9 - News Releases & Information Articles
- 11 - Media Interviews
- 24 - Technical Presentations
- 5 - Research Updates
- 2 - Guidebooks
- 8 - Tours
- 10 - Farm Shows
- 69 – Information Items in Total

News Releases & Information Articles

PAMI's material led to 9 news releases or articles during the year. Each release was sent to over 200 News Agencies across the Canadian Prairies. PAMI's list of agencies is included in Appendix II. An example PAMI News Release is included in Appendix I. The particular activities in this area are listed below.

- PAMI's Website has a New Look
- Mid Row or Side Band?
- Advertisement in University of Manitoba Faculty of Agriculture Students Organizations Magazine, Barbed Wire.
- Article in the Western Producer, "Vegetable Growers Eye Monitoring Technology", by PAMI and Neptec Design Group.

- Article in the Portage la Prairie Daily Graphic on whole-animal composting.
- Assisted AAFC News Release on CARD Funding.
- Article in Farm & Food Report, "Swine Manure on Grey Soils an Excellent Source of Nutrients".
- Article in the PIMA Pulse on the Research Update #763 – Hog Manure as a Fertilizer in the Grey Soil Zone.
- Weed Control in Organic Crops

Media Interviews

PAMI personnel had 11 interviews with media agencies over the year. These are shown following.

- April 1/03 – Interview with CJWW about PAMI's new website
- April 3/03 – Interview regarding direct seeding rising in popularity.
- July 8/03 – Video taken by Kevin Hursh of the PAMI Manure Injector truck, to be used in a Sask Pork video.
- July 14, 2003 – CKSW-AM phone interview on the swine manure research trial announcement involving PAMI and Wheatland Conservation.
- July 14, 2003 - CKSW-AM phone interview researchers say nutrients found in swine manure are no different than those found in commercial fertilizer operations.
- July 15, 2003 - Western Producer interview and demonstration of the bull fertility measuring device.
- August 5, 2003 - Western Producer interview on weed clipping.
- November 3, 2003 - BBS Broadcasting interview on Precipitation Harvesting, and Farm Safety.
- November 4, 2003 - Brenda Birley, free-lance writer, interview on Safety Project for Older Farm Machinery.
- December 3, 2003 - Farmscape interview Greenhouse Gas Mitigation Project, Demonstrating Value of Swine Manure Fertilizer.
- December 18, 2003 - CJVR Radio interview on ADF-funded Precipitation Harvesting Project.

Technical Presentations

PAMI's information services activities this year emphasized technical presentations. The organization prepared and delivered over 20 such presentations, and won two awards for its work. The activities in this area are listed below.

- Presentation on the Seabuckthorn at the Canadian Society of Agriculture Equipment (CSAE) Annual Meeting in Montreal, Quebec.
- "Air Seeding Corn for Silage" presentation for Bourgault Day in Saskatoon, SK.
- General presentation at Manitoba Ag Days in Brandon.

- Presentation to Manitoba Ag Specialists at Carman.
- Presentation on PAMI's services to the Pregnant Mare's Urine (PMU) Industry Awareness Meetings.
- Briefing on Root Crop Monitor at Manitoba Potato Production Days in Brandon.
- Survey of Processors and Farmers on use of Root Crop Monitor, at Manitoba Production Days in Brandon.
- Presentation on "Explore International Opportunities" and Tour of the Saskatchewan Operations by the Saskatchewan Trade and Export Partnership (STEP).
- Presentation on "PAMI's Testing Services" and Tour of the Saskatchewan Operations to the Saskatchewan Corporation Procurement Committee.
- General PAMI presentation and tour to a touring Chinese delegation.
- Presentation on "Fertilizer N Placement Effects on Crop Response" for the Western Canadian Agronomy Workshop in Saskatoon.
- "Bio-energy Opportunities & Issues in Agriculture" presentation to CANBIO Bio-energy Workshop in Vancouver.
- "Technology in the Pulse Sector – Research, Development and Intellectual Property Rights" presentation at "Processing for Profit" Conference in Saskatoon.
- "Another Look at Liquid, Dry & NH3" presentation at Bourgault Day in Saskatoon.
- Presentation on PAMI and its capabilities to NE Regional Extension Agrologists of SAFRR at Humboldt Rural Service Centre.
- "Mid Row Band vs. Side Band" presentation at Manitoba Ag Days in Brandon.
- Session-chair on direct seeding with air drills at Farmer Appreciation Day for CNH Flexi-Coil.
- "Liquid, Dry, and NH_3 Fertilizer" presentation at a Bourgault sponsored farmers meeting in Paddockwood.
- "Beginning Direct Seeding" presentation for the Saskatchewan Soil Conservation Association Conference.
- Award of Merit at the 16th annual SSCA Direct Seeding Conference in Regina.
- Completion of PAMI's 2002/03 Annual Report.
- PAMI ad for the 2003/04 PIMA Directory.
- Assistance on precision farming article in the Implement Success.
- Saskatchewan Herb and Spice Association award for excellence in research.

Research Updates

PAMI wrote 5 Research Updates during the year, as shown in Table 1 below. An example of these documents is shown in Appendix III.

Table 1. PAMI Research Updates Written in 2003/2004

Research Update Title	Date
Mid Row Band or Side Band? An Agronomic Comparison of Mid Row Banding and Side Banding Systems	April 2003
In-Crop Weed Clipping for Organic Weed Control	June 2003
Hog Manure as a Fertilizer in the Gray Soil Zone	September 2003
Comparison of Alternative Mechanical & Chemical Top-kill Methods for Seed Potatoes	October 2003
Post-emergent Swine Manure Injection on Cereal Crops: Agronomic & Economic Results	March 2004

Guidebooks

PAMI completed 2 Guidebooks during the year. These are described following. Guidebook covers are shown below.

- Agroforestry Planting Equipment Guidebook. This 17-page guide identifies machinery to mechanize planting and care of tree plantations (**Figure 2**).
- Canadian Pork Council Guidebook – Practices & Technologies to Reduce Environmental Impacts for Hog Production. This 120-page guidebook provides a scientific and economic evaluation of hog production practices, regarding environmental impact (**Figure 3**).

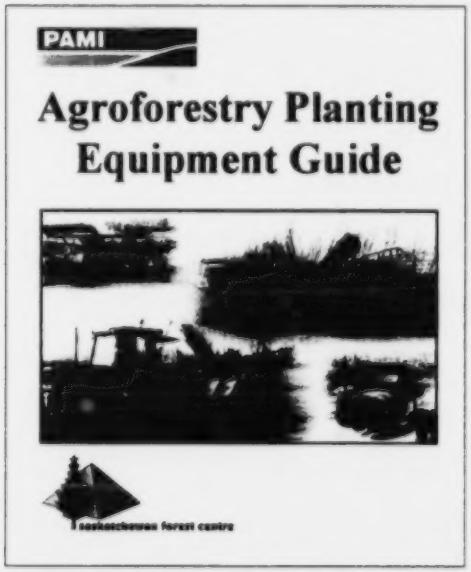

Figure 2. Agroforestry Guide

Figure 3. Hog Production Guide

Tours

PAMI carried out at least 8 tours during the year, as listed and illustrated below.

- Tour of PFRA and visiting dignitaries.
- Assisted in SAFRR Livestock Production and Manure Management Tour.
- Attended the Western Applied Research Committee/AAFC Scott Annual Field Day and Plot Tour.
- Attended the Wheatland Conservation Area/AAFC Swift Current Annual Field Day and Plot Tour.
- Attended the North East Agricultural Research Foundation/AAFC Melfort Annual Field Day and Plot Tour.
- Tour of manure demos at Bay Trail with Horizon Fertilizer.
- Tour and presentations to DLG Agricultural Engineering Test Establishment of Germany.
- PAMI plot tours at 8 field days across Saskatchewan (**Figure 4**).

Figure 4. PAMI's Gordon Hultgreen Giving a Tour

Farm Shows

PAMI attended and/or hosted booths on 10 occasions at Farm Shows. These are identified following.

- Booth at the Packaging Association of Canada (PAC) and the Manitoba Food Processors Association.
- Attended the Agricultural Machinery Convention (AMC) in Iowa. Staff renewed contacts with major farm equipment manufacturing groups.
- General booth at the Western Canada Farm Progress Show in Regina (**Figure 5**).

- Booth in New Inventions pavilion of the Western Canada Farm Progress Show featuring the ADF/MRAC-funded berry harvester.
- Attended the Bio-logical Futures Conference in Saskatoon.
- Attended the PIMA – Ag Manufacturers of Canada Annual Convention and Trade Show.
- Sponsored the Saskatchewan Herb & Spice Convention – Research/Processing/Industry Update.
- Sponsored the Saskatchewan Pork Symposium.
- Booth at Hog Days in Brandon.
- Booth at Manitoba Ag Days in Brandon.

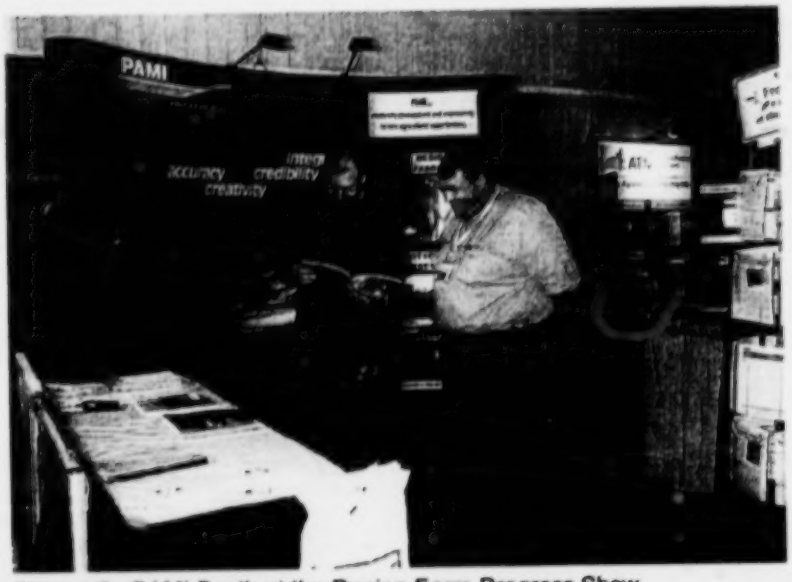

Figure 5. PAMI Booth at the Regina Farm Progress Show

2.4 IMPACT

Given the wide scope and thoroughness of PAMI's information strategy, and the stated audience levels of the media agencies it targets it is arguable that PAMI is known as an information resource to virtually every producer on the Canadian Prairies. Given that Saskatchewan's farm industry has revenues of about $6-billion annually, a 0.1% impact arising through PAMI's information would produce $6-millon in benefit annually. An additional $3.5-million in benefit would accrue for Manitoba, Saskatchewan's partner and co-funder in PAMI.

2.5 Conclusions

The purpose of this project was to disseminate information that PAMI could produce under its contracted research programs. An effective strategy was developed and employed to conduct about 70 information activities. These activities catered to the particular requests of producers and processors, as they targeted the key growth areas within agriculture.

3. Personnel

Professional
Wassermann, James
Broad, Barrie
Hill, Les
Hultgreen, Gordon
Kelly, Dave
Leduc, Phil
Lischynski, Darrell
Lucyshyn, Troy

Technical
Carmichael, Ken
Klapak, Nelson
Pauli, Brad
Stock, Wayne

Support Personnel
Doepker, Sharon
Jackson, Carol
Lepage, Dianne
Stroeder, Shelly
Szautner, Laurie

5. Equipment

There was no equipment purchased or rented with project funds.

6. Project Materials

Materials developed in the project are listed in the technical report. They are too numerous to include here and will be made available on PAMI's website and by specific request.

7. Project Photos

Photos related to each of the individual research projects that form this initiative are in electronic format and are held on file. Although too numerous to illustrate here, the photos will be made available on request, according to specific subject matter.

8. Acknowledgements

In all projects that comprise this initiative, specific acknowledgment of ADF funding is given several times, as follows:

1. In the project report.
2. In the Research Update, summarized from the main report.
3. In News Releases written about the project.
4. In any media interviews conducted regarding the project.

9. ICAR Data Entry

The following figure demonstrates that the proposal has been entered into ICAR (**Figure 6**).

Update Pending

Title: **Develop technology information package for key agricultural growth areas**

Objectives: To produce technology information packages for producers and processors, based on PAMI's research in four key growth areas within the agricultural industry of Ssakatchewan, namely: -pork and beef/ethanol production - flax whole-crop utilization - pulse production and processing - organic products production and processing.

Status Report: No information available.

Impact: All related research in the key growth areas conducted by PAMI and others will be compiled, analyzed as a whole, and used as a basis to develop guidelines for production and processing. A new critical mass of technology is emerging in the growth areas, and engineering and agronomic information relating espeically to machinery and equipment will be targeted. A large number of diverse technology information publications will be made available to producers and processors on medium from paper print to websites. This information will assist producers and processos to advance into the growth areas rapidly.

Establishment: PRAIRIE AGRICULTURAL MACHINERY INSTITUTE
P O Box 1150
Humboldt, Saskatchewan
SOK 2AO

Web Address: www pami ca

Staff:	**Name**	**Role**	**Project PY**
	Wassermann J	PROJECT LEADER	00.10
	Tech	TECHNICAL STAFF	00 40

Contact: James Wassermann **Tel:** 306-68205033 **Fax:** 306-682-5080

E-Mail Address: pami@sasktel.net

Funding Source: - SASKATCHEWAN DEPARTMENT OF AGRICULTURE AND FOOD, AGRICULTURE DEVELOPMENT FUND, Walter Scott Building, 3085 Albert Street, Regina, Saskatchewan, S4S 0B1

Key Code Pairs:

- Plants, Oilseed Crops And Products, Flax (01020500)
- Plant/Crop Management, Processing, Commercial Processing (40060300)
- Plants, Field Crops (01050000)
- Plant/Crop Management, Processing, Commercial Processing (40060300)
- Plants, Pulses (01060000)
  Plant/Crop Management, Processing, Commercial Processing (40060300)
- Animals, Animal Products And By-Products, Manure (02400700)
- Animal Management, Animal By-Product Management, Manure And Waste Management (57050400)

Start Date:	2003/05/01	**Expected End Date:**	2004/03/31
Project Number:	20020265	**ICAR-ID:**	33331363
ICAR Version (Year):	2003		

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CARC CRAC

Figure 6. ICAR Listing

Appendix I

Example PAMI News Release

PAMI RELEASE

April 21, 2003
Humboldt, SK
Immediate Release

Mid Row or Side Band?

The shift to one-pass, low disturbance seeding systems over the past decade has been dramatic. In 2002, about 40 percent of the seeded acreage in Saskatchewan was direct seeded compared to less than 10 percent in 1990. Keeping pace, seeding equipment has evolved rapidly to meet the challenges of applying fertilizer during seeding. Two systems, mid-row and side band are both popular with producers. But the question inevitably comes up – which is better?

The Prairie Agricultural Machinery Institute (PAMI) has just completed a three-year project designed to answer that question. From 2000 to 2002, PAMI conducted field trials comparing the performance of the Bourgault Mid Row Band and the Flexi-Coil Stealth Side Band systems.

The project was conducted in co-operation with Agriculture and Agri-food Canada and the Department of Soil Science at the University of Saskatchewan. It examined crop response under the mid-row band and side band systems in wheat, canola and flax at four Saskatchewan sites. All plots were direct-seeded into standing stubble. The three-year, four-location test provided a variety of soil moisture and temperature conditions, reflecting natural conditions producers are likely to face from year to year.

Funding for this project was provided by Agriculture and Agri-Food Canada's Matching Investment Initiative Program; Canadian Fertilizer Institute; Saskatchewan Agriculture, Food, and Rural Revitalization's Agriculture Development Fund; Western Grains Research Foundation; Bourgault Industries; and Saskatchewan Flax Development Commission. In-kind contributions were provided by Flexi-Coil Ltd., Big Quill Resource, and Western Ag Innovations.

Urea and NH_3 were the nitrogen (N) source and 11-51-0 was the phosphate source. All N fertilizer was side-banded with the Flexi-Coil system and mid-row banded with the Bourgault system. The phosphate was seed-placed with the mid-row system, side-banded when applied with urea and seed-placed when used with side-band NH_3. Yields and grain protein were recorded for each system at each site.

The results are now available. For your own copy of the Research Update #761, contact PAMI by phoning 1-800-567-7264 to order (a shipping charge of $1.07). You can also visit the website at www.pami.ca where you can view the publication, or print it for your files.

- 30 –

Media Contact:
Carol Jackson
PAMI (1-800-567-7264)

For more information on PAMI, visit www.pami.ca

It is PAMI's policy to acknowledge funding agencies and partners in all news releases. Your cooperation in ensuring that this happens in any published releases is appreciated.

Appendix II

Media Agencies List

MEDIA LIST CANADIAN – CATTLE				
Name	**Address**	**Town**	**Postal**	**Phone**
Alberta Beef Magazine, C. McReath	202-2915, 19th St. N.E.	Calgary, AB	T2E 7A2	
Alberta Cattle Breeders Association	Box 1060, Stn Main	Calgary, AB	T2P 2K8	(403) 261-0162
Alberta Cattle Commission	216 - 6715 8th Street NE	Calgary, AB	T2E 7H7	(403)275 -4400
Alberta Cattle Feeders Assoc	236, 2116 – 27 Ave NE	Calgary, AB	T2E 7A6	(403) 250-2509
Atlantic Beef, D. van Loon	Box 1509	Liverpool, NS	B0T 1K0	(902) 354-3321 dvl@atcon.com
Beef Information Cntr, Ms. Joan Perrin	2010 7th Avenue, Suite 8	Regina, SK	S4R 1C2	(306)787-8528
Can. Beef Breeds Council, H. McLean	2320 41st Avenue N.E.	Calgary, AB	T2E 6W8	
Can. Cattlemen's Assoc, D. Laycraft	215 - 6715 8th Street N.E.	Calgary, AB	T2E 7H7	
Canadian Bison Association	1660 Pasqua St. #200, Box 3116	Regina, SK	S4P 3G7	306/522-4766
Cattle Country, Wanda McFadden	Unit #222 – 530 Century Street	Winnipeg, MB	R3H 0Y4	204/772-4542 mcpa@escape.ca
Cattleman, G. Winslow	P.O. Box 6600	Winnipeg, MB	R3C 3A7	
Heartland Livestock Serv., J. LeClare	2625 Victoria Avenue	Regina, SK	S4T 7T9	
Manitoba Cattle Producers Assoc., W. McFadyen, Gen.Mgr.	Suite 222 - 530 Century Street	Winnipeg, MB	R3H 0Y4	(204)772-4542
Ontario Beef	130 Malcolm Rd.	Guelph, ON	N1K 1B1	
Sask. Cattle Breeders, R. Perry	Box 310	Punnichy, SK	S0A 3C0	

Saskatchewan Livestock Association	Box 3771	Regina, SK	S4P 3N8	306/757-6133
Saskatchewan Stock Growers Assoc.	Box 4752	Regina, SK	S4P 3Y4	757-8523
SK Cattle Feeders Assoc, S Johannesen	2nd Floor, 502 - 45 Street W	Saskatoon, SK	S7L 6H2	

MEDIA LIST CANADIAN – CEREALS				
Name	**Address**	**Town**	**Postal**	**Phone**
BC Grain Producers Assoc.	Box 161	Dawson Creek, BC	V1G 4H3	250/789-6885
Forum on Stored Grain Newsletter, Editor	Cereal Research Ctr, 195 Dafoe Rd	Winnipeg, MB	R3T 2M9	204/983-1631
Ontario Corn Producer	90 Woodlawn Rd.	West Guelph, ON	N1H 1B2	519/837-1660 ontcorn@ontariocorn.org
WCWGA	#700 – 177 Lombard Avenue	Winnipeg, MB	R3B 0W5	204/942-1680
WCWGA	3327 – 118th St.	Edmonton, AB	T6J 3J5	780/437-5765 sharon.mckinnon@shaw.ca
Western Barley Growers Association	Bag Service #1 Ag. Centre	Airdrie, AB	T4B 2C1	403/948-8530 wbga@wbga.org
Western Canadian Wheat Growers Assoc.	1836 Victoria Avenue E	Regina, SK	S4N 7K3	306/586-5866

MEDIA LIST CANADIAN - DAIRY				
Name	**Address**	**Town**	**Postal**	**Phone**
Dairy Guide, D. Wilkins	P.O. Box 6600	Winnipeg, MB	R3C 3A7	
Agrifoods Int.		Saskatoon, SK		306/664-0214 (Kathy)
Mb. Milk Producers, J.W.S. Wade, Mgr.	36 Scurfield Blvd., Box 724	Winnipeg, MB	R3C 2K3	488-6455
Ontario Dairy Farmer Magazine	P.O. Box 7400	London, ON	N5Y 4X3	
Saskatchewan Dairy Foundation	#2 – 425 Winnipeg Street	Regina, SK	S4R 8P2	306/949-6999

MEDIA LIST CANADIAN - FORAGE				
Name	**Address**	**Town**	**Postal**	**Phone**
Canadian Densified Hay Association	206 - 1235 17th Avenue SW	Calgary, AB	T2T 0C2	
Hay & Forage Grower, Intertec Publ Corp	Ste 300 - 7900 International Dr	Minneapolis, MN	55425	
Mb. Forage Seed Assoc., G. Huebner, Mgr.	Box 2000	Arborg, MB	R0C 0A0	(204)376-5211
SK Forage Council, Gary Kruger, Editor	Crop Science – Ag Bldg, U of S	Saskatoon, SK	S7N 5A8	
Ontario Forage Council, THINK GREEN	P.O. Box 1121	Guelph, ON	N1H 6N3	

MEDIA LIST CANADIAN – HOGS				
Name	**Address**	**Town**	**Postal**	**Phone**
Canada Pork Council, Martin Rice	1101 – 75 Albert Street	Ottawa, ON	K1P 5E7	236-9239
Manitoba Pork, R.L. Sedgwick	750 Marion Street	Winnipeg, MB	R2J 0K4	233-4991
Porc Quebec	555, boul Roland-Themen	Longueuil, PQ	J4H 3Y9	
Pork Producer	100 Broadview Ave, Suite 402	Toronto, ON	M4M 3H3	621-1874
Pork Central, Glenda Hewalo	Rm. 101 – 3085 Albert Street	Regina, SK	S4S 0B1	787-9119 ghewalo@agr.gov.sk.ca
SPI Marketing Group	2nd Floor, 502 45th Street W	Saskatoon, SK	S7L 6H2	653-3014
Sask Swine Breeders Assoc.	Exhibition Grnds	Regina, SK		757-6133

MEDIA LIST CANADIAN – OIL SEEDS				
Name	**Address**	**Town**	**Postal**	**Phone**
ACPC – Alberta Canola Producers Commission	#170, 14315 – 118 Avenue	Edmonton, AB	T5L 4S6	780/454-0844
Canola Council of Canada	400 – 167 Lombard Ave.	Winnipeg, MB	R3B 0T6	204/982-2100
Manitoba Canola Growers Association	Box 1672	Carman, MB	R0G 0J0	204/745-2178
National Sunflower Assoc of Canada, Attn: Mel Reimer	304 8th Street	Morden, MB	R6M 1N1	204/822-9542
National Sunflower Assoc.	4023 State Street	Bismarck, ND	58501	701/328-5100
Ontario Canola Growers Assoc.	137 Inkerman Street W.	Listowel, ON	N4W 1B8	519/291-4811
Sask Canola Development Commission	212 – 111 Research Drive	Saskatoon, SK	S7N 3R2	306/975-0262

MEDIA LIST CANADIAN - POULTRY				
Name	**Address**	**Town**	**Postal**	**Phone**
Canada Poultryman, ANNEX Publishing	222 Argyle Ave.	Delphi, ON	N4B 2Y2	519/582-2513
Mb. Broiler Hatching Egg Commission, D. Loewen, Pres.	Box 791	Carberry, MB	R0K 0H0	(204)834-3238
Mb. Broiler Hatching Egg Commission, S. Antoniuk, Gen Mgr	3489 Pembina Highway	Winnipeg, MB	R3V 1A4	261-9679
Mb. Chicken Producer Board, F. Homann, Mgr.	430-A Dovercourt Dr.	Winnipeg, MB	R3Y 1N4	489-4603
Mb. Egg Producers, P. Kelly, Manager	#18 Waverley Sq., 5 Scurfield Blvd.	Winnipeg, MB	R3Y 1G3	488-4888
Mb. Turkey Producers, B. Waters, Mgr.	430A Dovercourt Dr.	Winnipeg, MB	R3Y 1N4	489-4635
SK Comm. Egg Prod. Mrktg. Board	1810 - 9th Avenue North, Box 1637	Regina, SK	S4P 3C4	(306)924-1505
SK Hatchery Assoc, Ron Anstey	815 – 51st Street E	Saskatoon, SK	S7K 0X7	(306)242-1033
SK Turkey Producers	502 - 45th Street West	Saskatoon, SK	S7L 6H2	(306)931-1050
SK Chicken Mrktg. Brd.	1810 - 9th Avenue North, Box 1637	Regina, SK	S4P 3C4	(306)775-1677
SK Poultry Council, Rose Olson	223 Gladmer Park	Saskatoon, SK	S7J 2X3	

MEDIA LIST CANADIAN – PULSE CROPS				
Name	**Address**	**Town**	**Postal**	**Phone**
Mb. Pulse Growers Assoc., K. Tjaden, Exec Mgr.	Box 1760	Carman, MB	R0G 0J0	(204)745-6488
Pulse Canada, Gordon Bacon				gbacon@pulsecanada.com
Sask. Pulse Growers	P.O. Box 516	Regina, SK	S4P 3A2	306/668-5556
Sask Canola Dev. Commission	212 – 111 Research Dr.	Saskatoon, SK	S7N 3R2	306/975-0262 scdc@scdc.sk.ca
Sask Canola Growers, Ken Mannle	210 – 111 Research Drive	Saskatoon, SK	S7N 3R2	306/668-2380 scga@innovationplace.com

MEDIA LIST CANADIAN - SHEEP				
Name	**Address**	**Town**	**Postal**	**Phone**
Canadian Sheep Foundation	Bldg #54, Central Experiment Farm	Maple Drive, ON	K1A 0C6	613/233-9543 cansheep@cansheep.ca
Mb. Sheep Producers, G. Rannie, Pres.		Binscarth, MB	R0J 0G0	(204)532-2008
Sask. Sheep Devel. Brd., C. Sawyer	2910 - 11th Street West	Saskatoon, SK	S7K 2H6	306/933-5200
Sask. Sheep Breeders' Assoc., Keith Johnson	Box 484	Lashburn, SK	S0M 1H0	

MEDIA LIST CANADIAN – SPECIALTY CROPS				
Name	**Address**	**Town**	**Postal**	**Phone**
AIS Communications Ltd., P. Phillips	145 Thames Road W	Exeter, ON	N0M 1S3	
Keystone Veg Prod Assoc., Bruce Hood, President	Box 354	Carberry, MB	R0K 0H0	(204)834-2056
Manitoba Agric., J. Moen	1129 Queen's Avenue	Brandon, MB	R7A 1L9	
Manitoba Ag., K. Beaulieu	Box 1149	Carmen, MB	R0G 0J0	
Mb. Corn Growers Assoc, T. Bergsma, Sec. Mgr.	Box 188	Carman, MB	R0G 0J0	(204)745-6661
Mb. Seed Growers Assoc., B. McElroy, Pres.	RR#1	Darlingford, MB	R0G 0L0	(204)246-2193
Mb. Sugar Beet Prod. Assoc, K. Yuill, Pres.	Box 13, RR#2	Portage, MB	R1N 3A2	(204)239-1765
Ontario Corn Producer, T. Boland	222 Argyle Avenue	Delhi, ON	N4B 2Y2	
Swan Valley Herb Mill, L. Kublick	Box 265	Minnitonas, MB	R0L 1G0	
The Grower, M. Mazur	355 Elmira Road, #103	Guelph, ON	N1K 1S5	
Veg. Growers' Assoc. of Man., E Crosby	808 Muriel Street	Winnipeg, MB	R2Y 0Y3	
Veg. Growers Assoc. of Mb., T. Giffin, Pres.	Mayfair Farms, Box 160	Portage la Prairie, MB	R1N 3B2	(204)857-4581
Western Can. Mktg. & Proc. Assoc.	Virginia Coupal, Sedley Seeds	Sedley, SK	S0G 4K0	
SK Herb & Spice Assoc., C. Kehler	Box 60	Belle Plaine, SK	S0G 0G0	

MANITOBA MEDIA - PRINT				
Name	**Address**	**Town**	**Postal**	**Phone**
Ag Action, Interlake Publishing	410 Main Street, Box 190	Stonewall, MB	R0C 2Z0	
Agricore, Tracey Bryksa	Box 6600	Winnipeg, MB	R3C 3A7	Head Office 944-5411 tbryksa@agricoreunited.com
Agriweek	P.O. Box 444	Winnipeg, MB	R3C 2H6	
Allan Dawson	Box 247	Miami, MB	R0G 1H0	204/435-2392 adawson@fiwonline.com
Altona Red River Valley Echo	Box 700	Altona, MB	R0G 0B0	(204)324-5001
Baldur Gazette	Box 280	Baldur, MB	R0K 0B0	
Boissevain Recorder	Box 220	Boissevain, MB	R0K 0E0	
Brandon Sun (P), Lyndenm Behm	501 Rosser Avenue	Brandon, MB	R7A 5Z6	(204)727-2451
Canadian Press Winnipeg	Suite 101 - 386 Broadway	Winnipeg, MB	R3C 3R6	(204)988-1780
Carillon (P)	Box 1209	Steinbach, MB	R0A 2A0	
Carman Valley Leader, Gene	P.O. Box 70	Carman, MB	R0G 0J0	(204)745-2051
Citizen	P.O. Box 887	Thompson, MB	R8N 1N8	
Commerce & Industry, Frank Yeo	1839 Inkster Blvd.	Winnipeg, MB	R2X 1R3	(204)697-0835 mp@mercury.mb.ca
Country Guide, David Wreford (P)	Box 6600	Winnipeg, MB	R3C 3A7	204-944-5750 dwreford@fbc.unitedgrain.ca
Country Guide, Jay Whetter	Box 9800	Winnipeg, MB	R3C 3K7	204/944-2222 jay@fbcpublishing.com
Crossroads This Week	Box 160	Shoal Lake, MB	R0J 1Z0	204/759-2644 ctwnews@mts.net
Crow Wing Warrior	Box 578	Morris, MB	R0G 1K0	204/746-2823
Daily Graphic, S. Blake				204/857-3427 news.dailygraphic@shawcable.com
Dauphin Herald (P)	Box 548	Dauphin, MB	R7N 2V4	

Farmers Independent Weekly	Box 1846, Stn. Main	Winnipeg, MB	R3C 3R1	1-866-483-8343 Direct Line – 204/253-7253 (Linda) news@fiwonline.com
Flin Flon Reminder, Shirley Siemens	10 North Avenue	Flin Flon, MB	R8A 0T2	204/687-3454 reminder@mb.sympatico.ca
Freelance Writer, Jodi Ferguson	116 – 12th Street NW	Portage la Prairie, MB	R1N 2T1	(204)857-6565 s&jferguson@cpnet.net
Glenboro Gazette	P.O. Box 10	Glenboro, MB	R0K 0X0	
Grainews, Andy Sirski, Editor	Agricore United, Box 6600	Winnipeg, MB	R3C 3A7	204/944-5570 asirski@fbc.agricoreunited.com
Grainews, Dave Bedard				204/944-5587 dbedard@fbc.agricoreunited.com
Grandview Exponent	Box 39	Grandview, MB	R0L 0Y0	(204)546-2555
Herald-Leader Press	1941 Sask. Avenue W.	Portage la Prairie, MB	R1N 3B4	
Keystone Ag Producers Inc., Don Dewar	RR#5, Comp. 61	Dauphin, MB	R7N 2T8	(204)638-8433 Cell(204)648-4649
Lac du Bonnet Leader	P.O. Box 910	Lac du Bonnet, MB	R0E 1A0	
Manitoba Ag & Food, Farm Mgmt Section	903 - 401 York Ave.	Winnipeg, MB	R3C 0P8	204/945-4937 sgessner@gov.mb.ca
Manitoba Ag, Bob Ward	903 – 401 York Ave.	Winnipeg, MB	R3C 0P8	945-3498 mdp@gov.mb.ca
Manitoba Beef, Ramshead Pub., P. Schroedter	Box 113	Moosehorn, MB	R0C 2E0	
Manitoba Business Magazine	508 – 294 Portage Ave.	Winnipeg, MB	R3C 0B9	(204)943-2931 mbm@mts.net
Manitoba Cooperator , R. Friesen (p)	Box 9800	Winnipeg, MB	R3C 3K7	news@co-operator. mb.ca 204/954-1413
Manitoba Institute of Agrologists, Harvey Goehring	201 – 38 Dafoe Rd.	Winnipeg, MB	R3T 2N2	(204)275-3721 mia@mts.net
Manitou Western Canadian	Box 190	Manitou, MB	R0G 1G0	204/242-2555

Melita New Era	149 Main Street, P.O. Box 820	Melita, MB	R0M 1L0	204/522-3491 newera@mb.sympatico.ca
Minnedosa Tribune	Box 930	Minnedosa, MB	R0J 1E0	
Neepawa Press	Box 939	Neepawa, MB	R0J 1H0	
Neepawa/Hamiota Banner	P.O. Box 699	Neepawa, MB	R0J 1H0	
Neil Faba, August Communications	Editor, Implement Success			(204)957-0256 Toll Free: 866-957-0217 n.faba@august.ca
Pembina Times	P.O. Box 1246	Carman, MB	R0G 0J0	
Pilot Mound Sentinel Courier	Box 179	Pilot Mound, MB	R0G 1P0	(204)825-2772
PLP Daily Graphic, Ian R. White (P)	Box 130	Portage la Prairie, MB	R1N 3B4	plpnews@home.com 204/857-3427
Reston Recorder	Box 10	Reston, MB	R0M 1X0	
Reuters, Irene Marushko	Ste. 618 – 240 Graham Ave.	Winnipeg, MB	R3C 0J7	(204)947-3548
Roblin Review Ltd.	Box 938	Roblin, MB	R0L 1P0	
Russell Banner	Box 100	Russell, MB	R0J 1W0	rbanner@mts.net 204/773-2069
Selkirk Journal	217 Clandeboye Ave.	Selkirk, MB	R1A 0X2	
Souris Plaindealer	Box 488	Souris, MB	R0K 2C0	(204)483-2070
The Furrow, John Dietz	Box 157	Arden, MB	R0J 0B0	Tel/(204) 368-2274
The Pas, Opasquia Times	Box 750	The Pas, MB	R9A 1K8	
Times Publications	Box 1356	Winkler, MB	R6W 4B3	
Treherne Times	P.O. Box 50	Treherne, MB	R0G 2V0	(204)723-2542
Virden Empire Advance	300 Nelson St W, Box 250	Virden, MB	R0M 2C0	
Western Producer, D'arce McMillan	Winnipeg Office	Winnipeg, MB		(204)943-6294 darce.mcmillan@producer.com
Western Producer, Ian Bell				204/726-9463 ian.bell@producer.com
Western Producer, T. Tjaden	Office #1, 37 – 11 Street	Brandon, MB	R7A 4J2	(204) 726-9463

Westoba CU/Farmer Newsletter, W. Buhr	1020 Princess Avenue	Brandon, MB	R7A 0P8	
Winnipeg Canadian Publishers	1465 St. James Street	Winnipeg, MB	R3H 0W9	
Winnipeg Free Press, B. Redekop & B. Robinson (PLP)	1355 Mountain Avenue	Winnipeg, MB	R2X 3B6	(204)697-7000
Winnipeg Sun	1700 Church Avenue	Winnipeg, MB	R2X 3A2	204/632-2779 kmartens@wpgsun.com

MANITOBA TV & RADIO MEDIA LIST				
Name	**Address**	**Town**	**Postal**	**Phone**
CBC Radio, Susan Magas	Box 160	Winnipeg, MB	R3C 2H1	radionoon@winnipeg.cbc.ca
CBC TV, Dianna Swain	P.O. Box 160	Winnipeg, MB	R3C 2H1	788-3640
CFAR-AM	Box 430	Flin Flon, MB	R8A 1N3	
CFRY, Farm News Editor, H. Barker	1500 Saskatchewan Avenue W.	Portage la Prairie, MB	R1N 0N0	
CHMI-TV, MTN, News Director	Box 13000	Portage la Prairie, MB	R1N 3V3	
CHTM-AM	201 Hayes Rd.	Thompson, MB	R8N 1M5	
CJAR-AM	Box 2980	The Pas, MB	R9A 1M5	
CJOB Radio, Vic Grant	930 Portage Avenue	Winnipeg, MB	R3G 0P8	
CKDM, News Director	27 – 3RD Avenue N.E.	Dauphin, MB	R7N 0Y5	
CKLQ, B. Cochrane	624 – 14TH Street E	Brandon, MB	R7A 7E1	725-0515 cklq@farmscape.ca
CKND-TV	603 St. Mary's Road	Winnipeg, MB	R2M 3L8	
CKX-TV, K. Ann Philip	2940 Victoria Avenue	Brandon, MB	R7B 0N2	ckxnews@mb.sympatico.ca
CKY-TV	CKY Bldg., Polo Park	Winnipeg, MB	R3G 0L7	
Country Canada/CBC TV, Katherine Wilson & Karen Omelan	541 Portage Avenue, P.O. Box 160	Winnipeg, MB	R3C 2H1	(204)788-3045
Golden West Radio, Farm Broadcaster	210 – 125 Centre Ave.	Altona, MB	R0G 0B0	324-6464 thefarmdesk@goldenwestradio.com
HarrySiemens.Com, Harry Siemens	Box 279	Altona, MB	R0G 0B0	204/324-8504 mobile: 204/324-0166 harry@harrysiemens.com

SASKATCHEWAN MEDIA - PRINT				
Name	**Address**	**Town**	**Postal**	**Phone**
Ag World	204 - 5 Avenue N	Saskatoon, SK	S7K 2P1	664-8255 (w/ Star Phoenix) spnews@thesp.com
Ag-Com Productions – Prairie Farm Report – Bill Wilson	19 McLeod Rd	Emerald Park, SK	S4L 1B7	781-2424 bill@agcomdirect.com
Aginfonet, Kevin Hursh				933 0138
AgWeek, Rona Johnson				rjohnson@gfherald.com
Assiniboia Times	P.O. Box 910	Assiniboia, SK	S0H 0B0	642-5901
Bengough Deep South Star/Radville Star	Box 370	Radville, SK	S0C 2G0	869-2202
Biggar Independent	Box 40	Biggar, SK	S0K 0M0	948-3344
Broadview Express	P.O. Box 189	Grenfell, SK	S0G 2B0	697-2722 stoneprint@sasktel.net
Canora Courier/Kamsack Times/Norquay North Star/Preeceville Progress/Watson Witness	P.O. Box 746	Canora, SK	S0A 0L0	563-5131
Carlyle Observer	Box 160	Carlyle, SK	S0C 0R0	453-2525
Carnduff Gazette Post News	P.O. Box 220	Carnduff, SK	S0C 0S0	482-3252
Country Press (The)	Box 880	Warman, SK	S0K 4S0	934-6191
Craik Weekly News	Box 360	Craik, SK	S0G 0V0	734-2313
Creighton/Flin Flon Northern Visions Gazette	Box 900	Creighton, SK	S0P 0A0	688-3999
Cut Knife Highway 40 Courier	Box 400	Cut Knife, SK	S0M 0N0	398-4901
Davidson Leader	P.O. Box 786	Davidson,SK	S0G 1A0	567-2047 davidsonleader@sasktel.net
Elrose/Kyle Review	Box 70	Elrose, SK	S0L 0Z0	378-2255
Esterhazy Miner-Journal	P.O. Box 1000	Esterhazy, SK	S0A 0X0	745-6669
Estevan Lifestyles	Box 783	Estevan, SK	S4A 2A6	634-5112
Estevan This Week	1330 4th Street	Estevan, SK	S4A 0X2	634-6088

Eston Press Review	P.O. Box 787	Eston, SK	S0L 1A0	962-3221
Farm Light & Power (P)	2352 Smith Street	Regina, SK	S4P 2P6	525-3305
FARMING Magazine, B. Strautman	Box 267	Rouleau, SK	S0G 4H0	776-2337 bstrautman@producer.com
Foam Lake Review	P.O. Box 550	Foam Lake, SK	S0A 1A0	272-3262
Fort Qu'Appelle Times	P.O. Box 940	Fort Qu'Appelle, SK	S0G 1S0	332-5526 forttimes@sasktel.net
Four-Town Journal	Box 68	Langenburg, SK	S0A 2A0	743-2617 fourtown@sasktel.net
Gravelbourg Tribune	P.O. Box 1017	Gravelbourg, SK	S0H 1X0	648-3479
Grenfell Sun	Box 189	Grenfell, SK	S0G 2B0	697-2722 stoneprint@sasktel.net
Gull Lake Advance	Box 628	Gull Lake, SK	S0N 1A0	672-3373
Herbert Herald	Box 399	Herbert, SK	S0H 2A0	784-2422
HeyDay Communications, Rod Delahey	#200 – 173 – 2nd Ave. S.	Saskatoon, SK	S7K 1K6	683-4255 rod@heyday.ca
Hudson Bay Post Review	P.O. Box 10	Hudson Bay, SK	S0E 0Y0	865-2771 post.review@sasktel.net
Humboldt Journal (P)	P.O. Box 970	Humboldt, SK	S0K 2A0	682-2561
Indian Head-Wolseley News	Box 70	Indian Head, SK	S0G 2K0	695-3565
Ituna News	Box 413	Ituna, SK	S0A 1N0	795-2412
Kerrobert Citizen/Kindersley Clarion/Leader News/Kindersley West Central Crossroads	P.O. Box 1150	Kindersley, SK	S0L 1S0	463-4611
Kipling Citizen	P.O. Box 329	Kipling, SK	S0G 2S0	736-2535 thecitizen@sasktel.net
Kyle Times	Box 488	Kyle, SK	S0L 1T0	375-2620 kyletimes@sasktel.net
La Ronge Northerner	Box 1350	La Ronge, SK	S0J 1L0	425-3344
Lanigan Advisor	P.O. Box 1029	Lanigan, SK	S0K 2M0	365-2010 laniganadvisor@sasktel.net
Last Mountain Times	Box 340	Nokomis, SK	S0G 3R0	528-2020 LMT@sasktel.net

Leader-Post (The), Cheryl Krett & Gord Brock	1964 Park Street	Regina, SK	S4P 3G4	565-8300
Lloydminster Meridian Booster	5714 – 44 Street	Lloydminster, AB	T9V 0B6	875-3362
Lumsden Waterfront Press (The New)	Box 507	Lumsden, SK	S0G 3C0	731-3143
M.J. This Week	44 Fairford Street W	Moose Jaw, SK	S6H 6E4	692-2326
Macklin Mirror	Box 100	Macklin, SK	S0L 2C0	753-2424
Maple Creek and Southwest Advance Times	Box 1935	Maple Creek, SK	S0N 1N0	662-2100
Maple Creek News	Box 1360	Maple Creek, SK	S0N 1N0	662-2133 mcnews@sasktel.net
Meadow Lake Northern Pride	205A 3rd St. E.	Meadow Lake, SK	S9X 1R2	236-5353
Meadow Lake Progress	311 Centre Street	Meadow Lake, SK	S9X 1C2	236-5265 editor@meadowlake progress.com
Melfort Journal/Kinistino/Birch Hills Post-Gazette	P.O. Box 1300	Melfort, SK	S0E 1A0	752-5737 journal@melfortjournal.com
Melville Advance	Box 1420	Melville, SK	S0A 2P0	728-5448 editor@melvilleadvance.com
Moose Jaw Times-Herald, Lesley Sheppard	44 Fairford Street W.	Moose Jaw, SK	S6H 1V1	691-1262 editorial@mjtimes.sk.ca
Moosomin World-Spectator	Box 250	Moosomin, SK	S0G 3N0	435-2445
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Spiritwood Herald/Shellbrook Chronicle	Box 10	Shellbrook, SK	S0J 2E0	747-2442
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Appendix III

Example Research Update

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www.pami.ca

Mid Row Band or Side Band?

An Agronomic Comparison of Mid Row Banding and Side Banding Systems

The shift in farming practices over the past decade has been dramatic with the move to one-pass, low-disturbance direct seeding systems. In Saskatchewan direct seeded acres in 1990 were less than 10% of seeded acres compared to about 40% in 2002, and the trend is continuing.

Direct Seeding Trials.

Direct seeding equipment has evolved rapidly to meet the challenging seeding/fertilizing needs of prairie farmers. Two systems, mid row band and side band, are both popular with prairie farmers, and producers want to know their relative performance. The objective of this project was to provide an agronomic comparison of mid row band/side band seeding and fertilizing systems.

At a Glance

The Bourgault mid row band and Flexi-Coil Stealth side band systems were compared for agronomic performance with wheat, canola, and flax at four Saskatchewan sites over three years (2000, 2001, and 2002).

Urea and anhydrous ammonia (NH_3) were the nitrogen (N) sources and 11-51-0 was the phosphate source. All N fertilizer was side banded with the Flexi-Coil Stealth system while all N fertilizer was mid row banded with the Bourgault system. Phosphate fertilizer was seed placed with the mid row band system, side banded when used with side band urea, and seed placed when used with side band NH_3.

Overall there were no grain yield differences between the systems 84% of the time, and where there were differences there was almost an even split between the systems. Similarly, there were no differences in grain protein due to mid row band or side band. Urea provided slightly higher grain yields compared to NH_3 at Indian Head but not at Swift Current, Scott, or Star City.

The good news is that with both seeding/fertilizing systems the agronomic results are excellent.

THE PROJECT

The project was conducted jointly by PAMI, Agriculture and Agri-Food Canada, and the Department of Soil Science at the University of Saskatchewan.

The project was conducted over three years at Swift Current (Brown soil zone), Scott (Dark Brown soil zone), Indian Head (Black soil zone), and Star City (Gray soil zone) to represent a wide range of soil-climatic zones.

Figure 1. PAMI's Pneumatic Plot Seeder.

Plots were direct seeded in standing stubble to wheat, flax, and canola using the PAMI 10 foot (3 m), 4 rank pneumatic plot seeder configured to apply anhydrous ammonia (NH_3) or urea in addition to seed and phosphate fertilizer (Figure 1).

A modified Raven NH_3 cooler/control system was used for accurate NH_3 metering. Openers were bolted to heavy duty C-shanks at 10 inch (25 cm) row spacing using Flexi-coil Stealth side band openers for one series of treatments and Bourgault knives with Bourgault mid row coulter banders (placed between every second set of knives) for the second set of treatments (Figure 2 & 3).

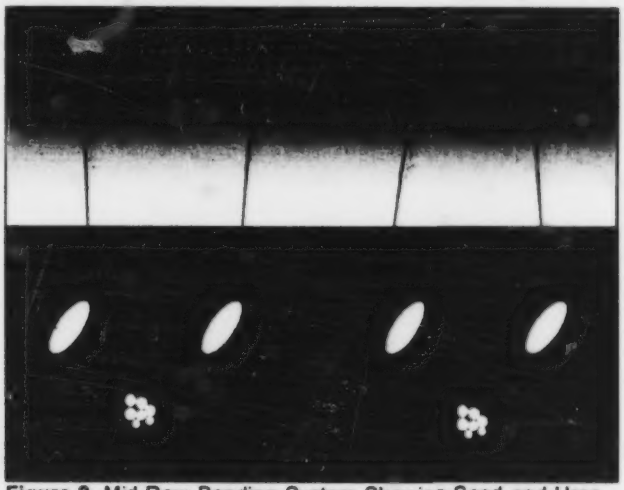


Figure 2. Mid Row Banding System Showing Seed and Urea Placement.

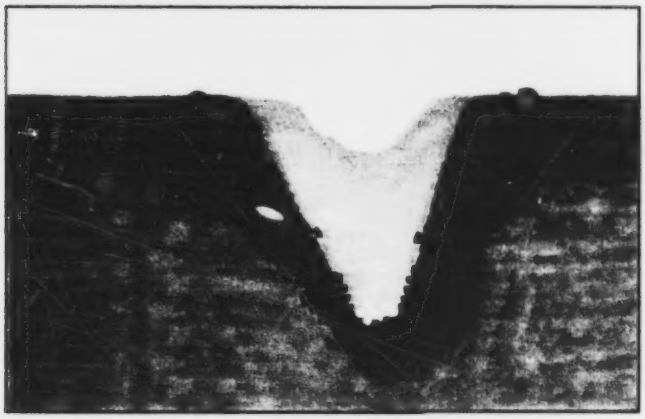


Figure 3. Side Banding System Showing Seed and Fertilizer Placement.

On-row packing with v-shaped semi-pneumatic packers was used for packing on seed rows.

All nitrogen fertilizer was side banded (1 inch (2.5 cm) below and 1 inch (2.5 cm) to the side of the seed row) with the Stealth opener. In addition, phosphate fertilizer was side banded when using urea (46-0-0) and seed placed when the system was switched to NH_3 (82-0-0). In contrast, urea and NH_3 was mid row banded (5 inches (12.5 cm) to the side of the seed row) and the phosphate was seed placed with the mid row band system. Nitrogen fertilizer rates for both systems were 0, 36, 71, and 107 lb N/acre (0, 40, 80, and 120 kg N/ha) at Star City and Indian Head, and 0, 27, 54, 80 lb N/ac (0, 30, 60, and 90 kg N/ha) at Scott and Swift Current.

The Results

An Explanation of "Significant Difference"-
The word "significant" can mean different things to different people. However, in this discussion "significant difference" refers to the statistical probability of a difference being real. In this case, if the grain yield of urea Treatment A is significantly greater than the grain yield of urea Treatment B, that means the probability of the difference being real is statistically true 95% or more of the time. From an agricultural research point of view, the convention is that differences are only significant if the probability of it being true is 95% or greater.

Growing Conditions

At Swift Current temperature and overall precipitation were above normal in 2000, very dry with above average temperatures in 2001, and in 2002 very low soil moisture and precipitation in May followed by above normal rainfall for the rest of the growing season. Temperature was near normal in 2002. At Scott precipitation was low in the early part of the growing season in 2000 followed by severe drought in 2001 and 2002. All three crops failed in 2002 due to severe drought. At Star City growing conditions were close to normal in 2000 followed by severe drought in 2001 and 2002. The wheat crop was a failure at Star City in 2002. At Indian Head temperatures were unusually cool and precipitation above average during May and June in 2000. Conditions were very dry in the whole 2001 season and the early part of 2002. Precipitation was near normal at Indian Head from June to August 2002.

Overall there was a wide range of climatic conditions at the four locations over the three years of the project. Due to crop failure, the wheat crop in Star City and all crops at Scott in 2002 were not considered in the overall conclusions.

Nitrogen Source

NH_3 provided similar yield results compared to urea with both the mid row band and side band systems.

This research confirms other research results that NH_3 can be safely side banded without crop damage. Note that under some conditions, there could be a small risk of seedling damage with side band NH_3.

Grain Protein

At the time of writing, protein data was only available for 2000 and 2001. Based on two years data, there were no significant differences in grain protein due to mid row banding or side banding.

Grain Yield

Overall there were no significant grain yield differences between mid row band and side band systems 84% of the time. Where there were significant yield differences, the mid row band system had higher grain yields 6% of the time and the side band system had higher grain yields 9% of the time.

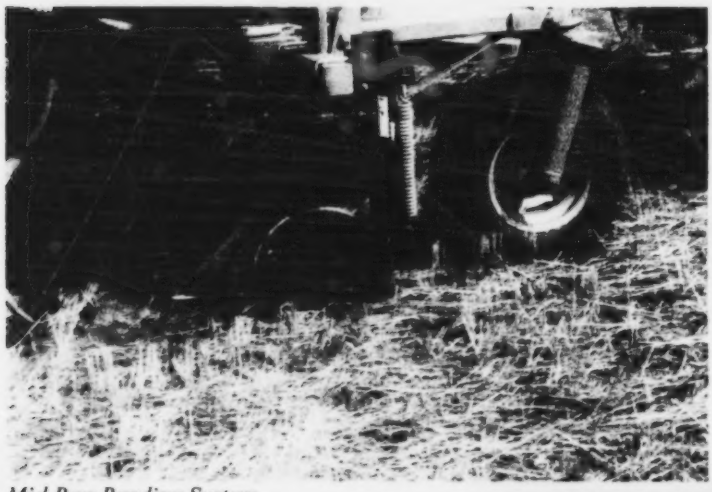
Other Observations

Under dry soil conditions during the first few weeks after seeding, access to the nitrogen from the mid row band is limited due to the distance between the seed row and the nitrogen band.

Side band openers are more difficult to adjust for optimum seed depth, compared to a knife opener, due to soil disturbance in the seeding zone with the side band opener. Overall soil finish is also rougher with the side band system compared to the mid row band system.

Conclusions

Results from this three-year project indicate that mid row band and side band systems both do an excellent job of direct seeding, and provide identical yield results 84% of the time.



Mid Row Banding System.

Side Banding System.

Acknowledgments:

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